

HISTORIC BRIDGE INVENTORY

Ocean-to-Ocean Bridge

PROPERTY IDENTIFICATION

county	Yuma	inventory number	08533
milepost	0.03	inventory route	Penitentiary Avenue
location	0.5 mi NE I 8	feature intersected	Colorado River
city/vicinity	Yuma	USGS quadrangle	Yuma East
district	82	UTM reference	11.723383.3623720

STRUCTURAL INFORMATION

main span number	1	main span type	310
appr. span number	1	appr. span type	309
degree of skew	0	guardrail type	
main span length	336.0	superstructure	steel pin-connected Pennsylvania through truss
structure length	444.0	substructure	concrete abutments, wingwalls and piers
roadway width	18.0	floor/decking	concrete deck with asphalt overlay
structure width	35.0	other features	upper chord: 2 built-up channels w/ cover plate and double lacing; lower chord: 2 rectangular eyebars; vertical: 2 channels w/ lacing; diagonal: 4 rectangular eyebars; steel lattice guardrails

HISTORICAL INFORMATION

construction date	1915	designer/engineer	US Office of Indian Affairs
project number		builder/contractor	Omaha Structural Steel Works, Omaha NE
information source	ADOT bridge records	structure owner	Yuma County
alteration date(s)	1943 2002	alterations	deck replaced; bridge rehabilitated and "Ocean-to-Ocean Highway" sign replicated

NATIONAL REGISTER EVALUATION

inventory score	93	For additional information, see "Vehicular Bridges in Arizona 1880-1964" National Register Multiple Property Documentation Form	
		NRHP eligibility	listed
		NRHP criteria	A <u>x</u> B <u> </u> C <u>x</u>
		signif. statement	one of the most important wagon bridges in Southwest

FORM COMPLETED BY

Clayton B. Fraser, Principal

FRASERdesign
420 South County Road 23E
Loveland, Colorado 80537
31 October 2004

OCEAN-TO-OCEAN BRIDGE

Structure No. 8533



PHOTO INFORMATION

date of photo: March 2003

view direction: west north

photo no.: 03.03.145 03.03.146

CONSTRUCTION HISTORY

After years of agitating by Yuma citizens, Arizona Representative Carl Hayden in 1913 steered a bill through Congress authorizing construction of a steel highway bridge over the Colorado River at Yuma. Ostensibly to provide a crossing for the Yuma Indian Reservation across the river in California, the Yuma bridge was funded in part by the Office of Indian Affairs [OIA]. The State of Arizona would contribute \$25,000, as would Imperial County, California. OIA engineers in Washington designed this long-span through truss and located it at the foot of Prison Hill Road, near the Territorial Penitentiary, immediately upstream from the existing ferry here. As delineated, the structure consisted of a pin-connected Pennsylvania through truss, with a rigid-connected Warren deck truss approach span at one end. The trusses would be carried high over the river by concrete abutments and pier.

In June 1914 the OIA contracted with the Omaha Structural Steel Works of Nebraska to fabricate and construct the bridge for over \$72,000. But the OIA engineers were unfamiliar with the vagaries of the Colorado River, and problems arose soon after construction began in October. After the falsework was washed away twice that winter, Omaha Steel opted to erect the truss on barges and float it into position. On March 3, 1915, the 336-foot-long span was swung in a carefully choreographed maneuver amidst widespread celebrating throughout the town. On May 22 the bridge was ceremoniously opened to traffic. The bridge carried the Ocean-to-Ocean Highway for decades before the highway was superseded by Interstate 8. It still functions in place, bearing local city-street traffic. The structure has recently been rehabilitated and a replica of the original "Ocean-to-Ocean Highway" sign installed on one of its truss webs.

SIGNIFICANCE STATEMENT

The first train crossed the Colorado River on a bridge in September 1877, and the Yuma crossing has been a pivotal one for Southwestern transportation since. The Penitentiary Avenue bridge, located on a site originally intended for a railroad structure, formed a crucial link on the nationally important Ocean-to-Ocean Highway. "This is the first highway bridge built across the Colorado River in all its length," the *Yuma Sun* stated in 1915. Although the writer neglected the dozens of bridges at the river's upper reaches in Colorado, the Ocean-to-Ocean Bridge was the first highway span over the lower Colorado. Technologically, the structure is significant as the earliest and longest through truss in Arizona, the only Pennsylvania truss and one of only three pin-connected trusses among Arizona's vehicular structures. It is today distinguished as one of the most important early spans in the Southwest.

NATIONAL REGISTER EVALUATION

TECHNOLOGICAL SIGNIFICANCE

- ☐ represents the work of a master
☐ possesses high artistic values
☒ represents a type, period or method of construction

HISTORICAL SIGNIFICANCE

- ☐ associated with significant persons
☒ associated with significant events or patterns
☐ contributes to historical district

NATIONAL REGISTER CRITERIA

- ☒ Criterion A
☐ Criterion B
☒ Criterion C

NATIONAL REGISTER ELIGIBILITY

- individually eligible ☒ yes ☐ no
 contributes to district ☐ yes ☒ no

AREA OF SIGNIFICANCE: Transportation; Engineering
 PERIOD OF SIGNIFICANCE: 1915-1964
 THEME(S): Transportation: Highways

Structure No. 8533



HISTORIC BRIDGE INVENTORY

Antelope Hill Bridge

PROPERTY IDENTIFICATION

county	Yuma	inventory number	abd.
milepost	0.00	inventory route	abd. US 95
location	3.6 mi NW of Tacna	feature intersected	Gila River
city/vicinity	Tacna	USGS quadrangle	Wellton Mesa
district	82	UTM reference	11.779955.3623620

STRUCTURAL INFORMATION

main span number	15	main span type	104
appr. span number	0	appr. span type	
degree of skew	0	guardrail type	0
main span length	65.0	superstructure	concrete two-beam deck girder
structure length	975.0	substructure	concrete abutments, wingwalls and bullnosed piers
roadway width	16.0	floor/decking	concrete deck
structure width	18.0	other features	incised panels on girder spandrels; threaded steel pipe guardrails (removed); concrete curbs

HISTORICAL INFORMATION

construction date	1915	designer/engineer	Arizona State Engineer
project number		builder/contractor	Perry E. Borchers; convict work force
information source	ADOT bridge records	structure owner	Yuma County
alteration date(s)	ca1950	alterations	bridge badly deteriorated, with several spans washed away

NATIONAL REGISTER EVALUATION

inventory score	80	For additional information, see "Vehicular Bridges in Arizona 1880-1964" National Register Multiple Property Documentation Form	
		NRHP eligibility	listed
		NRHP criteria	A <u>x</u> B <u> </u> C <u>x</u>
		signif. statement	one of state's most important early wagon bridges, located on important route

FORM COMPLETED BY

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420 South County Road 23E
Loveland, Colorado 80537
31 October 2004

ANTELOPE HILL BRIDGE

Structure No.: abandoned



PHOTO INFORMATION

date of photo.: March 2003

view direction: south west

photo no.: 03.02.164 03.02.165

ANTELOPE HILL BRIDGE

Structure No.: abandoned

CONSTRUCTION HISTORY

An integral part of the Ocean-to-Ocean Highway across southern Arizona was the bridge over the Gila River. Located at the foot of Antelope Hill, it crossed this problematic river about 3½ miles northwest of Tacna. In 1912 Arizona State Engineer Lamar Cobb first surveyed sites at Antelope Hill and the nearby town of Dome and selected the former for a bridge. The next year his office designed a multiple-span concrete structure comprised of 15 girder spans supported by massive bullnosed concrete piers. The longest of these spans extended 65 feet, and the bridge's overall length was almost 1000 feet, not including the timber trestle approaches on the ends. In December Cobb advertised for competitive bids to build the immense structure. Opting instead to use prison labor, the state rejected all bids. Cobb then redesigned and rebid the project when it became apparent that not enough prison manpower would be available. In May 1914 Perry Borchers was hired to build the bridge. But Borchers was in over his head. He began construction in June but soon defaulted, and after floods damaged the partially completed structure that winter, the state again undertook the project with prison laborers. The Antelope Hill Bridge was finally opened to traffic on August 18, 1915, with a gala picnic attended by thousands of well-wishers. With a poorly selected site, however, it suffered extensive damage with almost every major flood on the Gila. After years of repeated reconstruction of the concrete bridge and timber pile approach trestles, the Antelope Hill Bridge was replaced in 1929 by the McPhaul Bridge [abd.] and vacated. Today it stands abandoned in place in badly deteriorating condition, with the steel pipe guardrails removed, the deck disintegrating and some of its spans and piers washed away.

SIGNIFICANCE STATEMENT

As a major crossing on a nationally important transcontinental route, the Antelope Hill Bridge is significant for its pivotal role in early Arizona transportation. The bridge is also significant in Arizona history as one of the few structures remaining from the early state period that had been built using prison labor. The bridge is technologically significant as an outstanding example of a formative structural type. Although numerous concrete girder bridges were erected throughout Arizona in the 1910s, 1920s and 1930s, most featured designs with four or more relatively shallow girders. The earliest concrete girders in Arizona typically employed two-girder designs. Of these, only the Santa Cruz [8166], Hell Canyon [abd.], and Antelope Hill bridges remain. The Antelope Hill Bridge is now in ruins, due to the ravages of the Gila River. Although this has impacted its structural integrity seriously, the bridge still conveys a sense of its intact self. The destruction from the river is an integral part of its history, and the extensive damage adds to the bridge's interpretive value. The Antelope Hill Bridge is an important early remnant of highway construction in Arizona.

NATIONAL REGISTER EVALUATION

TECHNOLOGICAL SIGNIFICANCE

- ☐ represents the work of a master
☐ possesses high artistic values
☒ represents a type, period or method of construction

HISTORICAL SIGNIFICANCE

- ☐ associated with significant persons
☒ associated with significant events or patterns
☐ contributes to historical district

NATIONAL REGISTER CRITERIA

- ☒ Criterion A
☐ Criterion B
☒ Criterion C

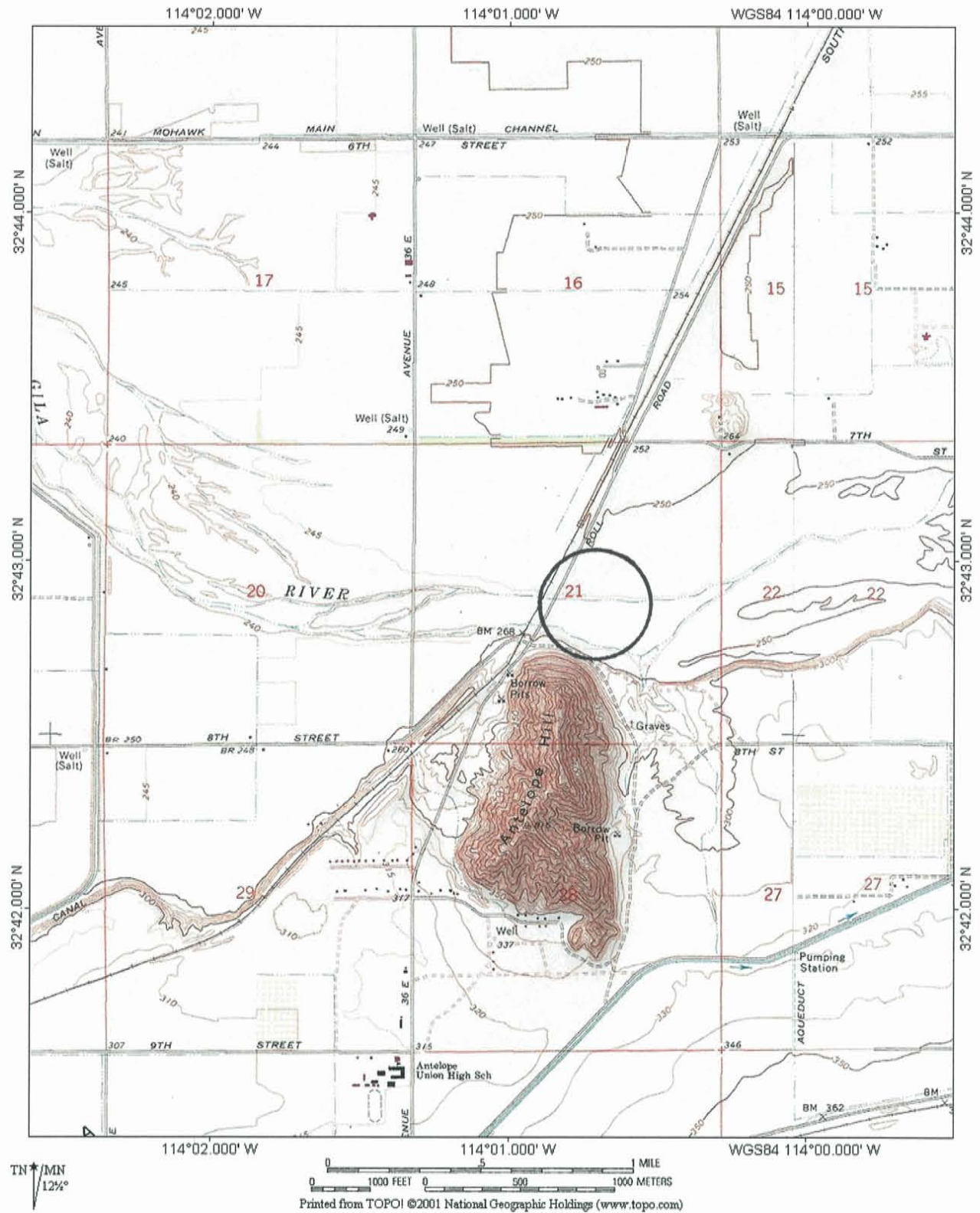
NATIONAL REGISTER ELIGIBILITY

- individually eligible ☒ yes ☐ no
contributes to district ☐ yes ☒ no

AREA OF SIGNIFICANCE: Transportation; Engineering
PERIOD OF SIGNIFICANCE: 1915-1964
THEME(S): Transportation: Highways

ANTELOPE HILL BRIDGE

Structure No.: abandoned



Location Map

HISTORIC BRIDGE INVENTORY

McPhaul Bridge

PROPERTY IDENTIFICATION

county	Yuma	inventory number	abd.
milepost	0.00	inventory route	abd. US 95
location	0.2 mi N of Dome	feature intersected	Gila River
city/vicinity	Dome	USGS quadrangle	Laguna Dam
district	82	UTM reference	11.741563.3627538

STRUCTURAL INFORMATION

main span number	1	main span type	313
appr. span number	0	appr. span type	
degree of skew	0	guardrail type	0
main span length	798.0	superstructure	steel suspension bridge with rocker-type towers
structure length	1184.0	substructure	concrete abutments, deadmen and spill-through piers
roadway width	14.7	floor/decking	timber deck with asphalt overlay
structure width	21.0	other features	main suspension cable: 3 parallel strands of 290 #8 Roebling bridge wire (5-3/4" diameter); rocker-type braced steel towers (70.5' tall) w/ cast steel cable cradles; rigid Warren pony stiffening trusses

HISTORICAL INFORMATION

construction date	1929	designer/engineer	Arizona Highway Department
project number		builder/contractor	Levy Construction Company, Denver CO
information source	ADOT bridge records	structure owner	Yuma County
alteration date(s)		alterations	

NATIONAL REGISTER EVALUATION

inventory score	91	For additional information, see "Vehicular Bridges in Arizona 1880-1964" National Register Multiple Property Documentation Form	
		NRHP eligibility	listed
		NRHP criteria	A <input checked="" type="checkbox"/> B <input type="checkbox"/> C <input checked="" type="checkbox"/>
		signif. statement	extraordinary long-span example of uncommon structural type, located on important route

FORM COMPLETED BY

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420 South County Road 23E
Loveland, Colorado 80537
31 October 2004

McPHAUL BRIDGE

Structure No.: abandoned

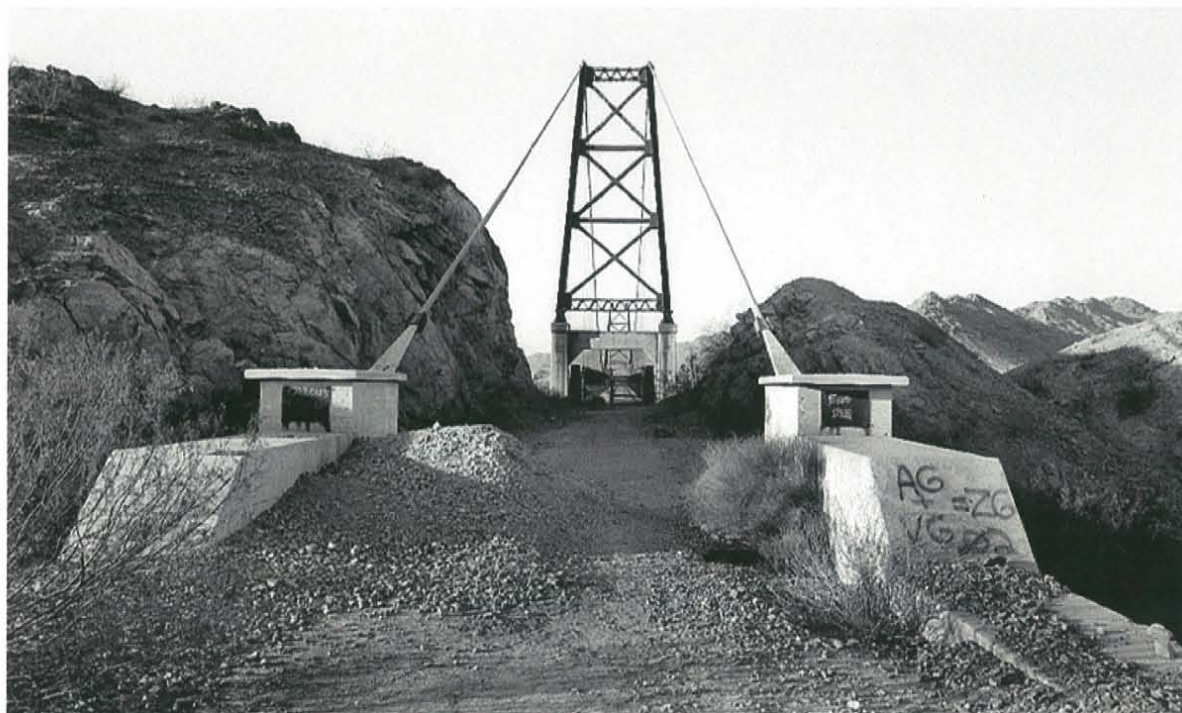


PHOTO INFORMATION

date of photo.: March 2003

view direction: north southeast

photo no.: 03.03.186 03.03.193

CONSTRUCTION HISTORY

When Arizona State Engineer Lamar Cobb first looked for a crossing location of the Gila River for the Ocean-to-Ocean Highway in Yuma County, he inspected sites at Dome and Antelope Hill and chose the latter. The Antelope Hill Bridge [abd.], a multiple-span concrete girder structure, was completed in 1915 and immediately began suffering damage with almost every flood on the Gila. Eventually, after years of repairs, it was abandoned altogether. The highway had already been rerouted through Telegraph Canyon, eliminating the need for the bridge altogether, when the Highway Department decided to replace the existing ford at Dome with a bridge. Soundings were taken, a site selected near a granite outcrop, and in 1927 the engineers decided to avoid the scouring problems of the Antelope Hill Bridge by free-spanning the river completely with a long suspension bridge.

In January 1928 AHD contracted with the Levy Construction Company of Denver to build the structure for \$152,454. Although AHD engineers had outlined the bridge's location and span, Levy engineered the bridge itself with the assistance of nationally known consulting engineer Ralph Modjeski. Construction began in mid-1928 and was completed in December 1929. The McPhaul Bridge carried traffic on US 95 until its replacement in 1968. It was abandoned in place and, though closed, still spans the Gila River in unaltered and relatively good condition.

SIGNIFICANCE STATEMENT

The McPhaul Bridge is significant for several reasons. First, it formed an integral link on a regionally important north-south highway in western Arizona. Second, it was one of two bridges in the state (other: Red Rock Bridge (J.A.L. Waddell)) associated with a pre-eminent American civil engineer—in this case Pennsylvania engineer Ralph Modjeski. Finally the McPhaul Bridge is technologically important as one of two vehicular suspension spans in Arizona (other: Cameron Bridge). Its rocker-type towers are rare among suspension bridges, distinguishing this structure even further among the vehicular spans in the state. Because of their exotic nature and high construction costs, suspension bridges were infrequently erected in this country, and few from the pre-Depression era have remained intact. The McPhaul Bridge is also noteworthy for its scale. At the time of its completion, the bridge had the longest span length of any bridge in the state, and it has the longest span among all the bridges in the inventory. Strikingly beautiful, graceful and exotic as well as historically and technologically important, the McPhaul Bridge is among Arizona's most important vehicular structures.

NATIONAL REGISTER EVALUATION

TECHNOLOGICAL SIGNIFICANCE

☐ represents the work of a master
☐ possesses high artistic values
☒ represents a type, period or method of construction

HISTORICAL SIGNIFICANCE

☐ associated with significant persons
☒ associated with significant events or patterns
☐ contributes to historical district

NATIONAL REGISTER CRITERIA

☒ Criterion A
☐ Criterion B
☒ Criterion C

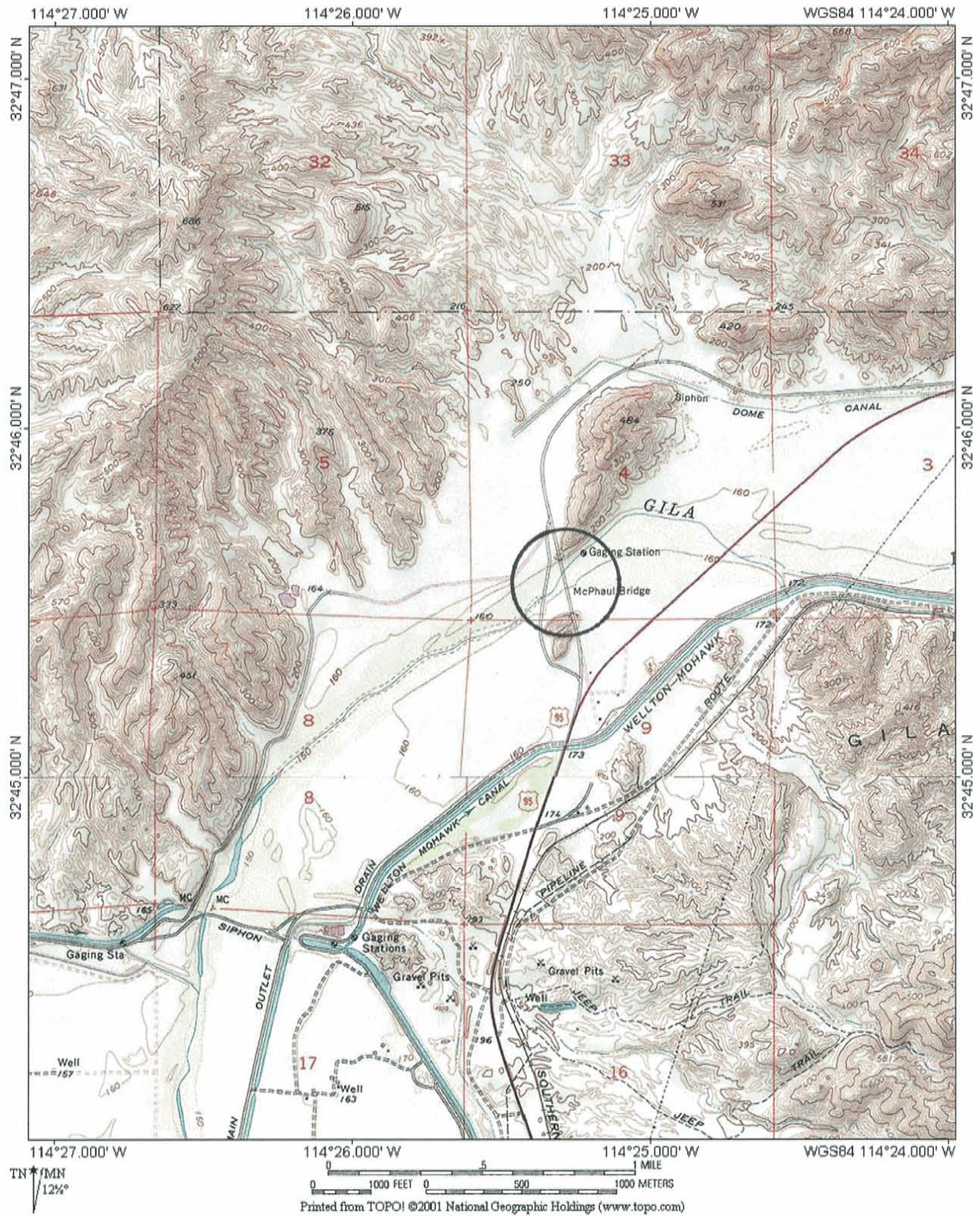
NATIONAL REGISTER ELIGIBILITY

individually eligible ☒ yes ☐ no
 contributes to district ☐ yes ☒ no

AREA OF SIGNIFICANCE: Transportation; Engineering
 PERIOD OF SIGNIFICANCE: 1929-1964
 THEME(S): Transportation: Highways

McPAUL BRIDGE

Structure No.: abandoned



Location Map